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# THE SEASONS.

"KNOWLEDGE NEVER LEARNED OF SCHOOLS."

*Edited by* MISS ARMITT.

## THORNS AND PRICKLES.

BY MRS. DORMAN.

"*Nemo me impune lacessit.*" "Wha daur meddle wi' me?" The motto that accompanies the national flower of Scotland, and the formidable array of thorns and prickles that beset so many other plants besides the thistle, seem to suggest a policy both of defence and defiance on the part of certain members of the vegetable kingdom, a policy that we may reasonably suppose to be necessary for them, if they are to hold their own in a world of plant-devouring animals. Sharp thorns and spines, and hooked prickles, and barbed darts, are doubtless developed chiefly in order to ward off the attacks of those dangerous enemies, but it seems to me that the hooked prickles of such plants as the brier-rose, the bramble, and the hop, may be also useful as aids in climbing, and may thus serve a double purpose, though the same can scarcely be said of thorns.

Since writing the last sentence I find that Kerner mentions that "all plants which weave into the thicket of other plants are equipped with barbed spines, prickles, and bristles, which assist them in maintaining themselves at the heights reached." In illustration of this statement three species of climbing palms are named, whose leaves and rachis are thickly beset with barb-like spines, by means of which they anchor themselves firmly in the highest trees over which they climb. The difference between the thorn and the prickle requires a word of explanation. The prickle is, so to speak, only skin-deep, but the thorn has a more inward origin, and shows a settled determination on the part of the plant to make any attacks upon it as difficult and dangerous as possible. A thorn or spine is technically a short hardened branch, terminated by a point, covered with bark, and

frequently bearing leaves, as in the hawthorn and sloe. That these spines are modified branches is proved by their structure being of the same nature as the stem, and also by their position in the axils of leaves, as well as by their bearing leaves. The prickle, on the other hand, is a modification of the epidermis, and if we peel off the bark of a prickly stem like the rose or bramble, we find that the prickles come away with it. Prickles are somewhat of the nature of hairs, which nearly all plants bear on some part or another, on stem, or leaf, or flower, and which plainly originate in the epidermis. The term *hair* is applied to the thin, delicate and flexible appendages of the plant, and that of bristle to stiff hairs; prickles are strong, woody hairs.

Again, the true thorns, which are simply arrested branches, must be distinguished from leaf thorns, which are transformed leaves, such as are found so regularly distributed over the curiously flattened branches of the prickly pear, and, these again, from the spinous stipules of the gooseberry and barberry. The external resemblance of all these structures is explained by the fact that during the life of the plant they all perform similar functions, and ward off with their sharp points the attacks of too aggressive animals. Then there are the leaf-spines of such plants as the holly and thistle, which, I suppose, are not true thorns, but simply epidermal growths, for it does not appear that the vascular bundles entering the leaf from the stem take any part in their development.

In the British Isles the number of species of thorny trees or shrubs is not very large. We have both the blackthorn and the whitethorn, the latter so much used in the formation of hedges, and it is worthy of remark that the thorns are usually confined to the lower parts of the annual shoots, where there is a thorn and a bud in each leaf-axil, and higher up, where the plant is less liable to attack, only buds are produced. The same natural order gives us the prickly brambles and wild roses. The order Leguminosæ includes a few spine-bearing plants such as *Ononis spinosa* and *Genista anglica* and the common gorse or furze, which is a densely spinous shrub, whose peculiar appearance is well known. We look in vain for leaves upon a gorse-bush, for after the seedling stage the leaves become spinescent, and we have the strange transformation of both leaves and arrested branches into one mass of sharp spines, without their thereby losing the ordinary functions of leaves, as all the business of assimilation, transpiration, etc., is perfectly performed by them. In spite of their formidable appearance gorse bushes are cropped by sheep, especially when in a young state, but when the spines have hardened, if the plant be used for fodder it has to be bruised or cut up into small pieces, so as to render the sharp points innocuous.

Thistles, which grow in similar waste places, are very aggressively armed with spines, which start out at all angles and in all directions from the edges of their sinuously-lobed leaves, and form an effectual protection against grazing animals as well as slugs. Considering also the wonderful mechanism by means of which thistle seeds are borne "to fresh fields and pastures new," there is no wonder that they should abound in all localities from which the farmer's spud is absent. But if in northern latitudes the number of armed plants is not very great, it is far different in the hot countries both of the old and new world, where prickly and thorny plants abound, and the Mediterranean region is specially rich in thorny shrubs. So are the sandy and sterile portions of Judæa, especially in the gorges of the mountain ranges. Even nettles there are abnormally luxuriant, and develop a wonderful strength of spine and power of stinging. The most formidable as well as the most characteristic of the flowering plants of Palestine is the wild tragacanth, or desert astragalus of the same natural order as our spiny Rest-harrow and thorny Genista. This shrub manages to thrive in every kind of position, and Canon Tristram gathered fifteen varieties, some of which were lowly dwarfed plants about two feet high, and others tall enough to turn with their stiff and barbed thorns both the careless traveller and the imprudent beast, for the pinnate leaves terminate in a long prickly sort of midrib, and the whole plant presents to the observer a solid mass of pointed spiny-prongs, sharp as a needle and strong as steel. The gum-tragacanth of commerce oozes from this strange plant and only flows during sunshine.

The cactus tribe seems to upset all one's ideas of what a plant should be, for the stress of circumstances and the exigencies of self-preservation have produced very strange results. Of leaves these plants have none, but instead they

are beset with horny spines, very keen and powerful, and their inflated succulent stems are sometimes spherical, sometimes jointed, and sometimes assume the form of an upright polygonal column. Some attain to a height of thirty-two feet and a circumference of three feet. Their habitats are the hot, dry plains of Mexico and tropical America, and so well are they adapted to their environment, that when every other plant is withered under the scorching heat, and all its moisture dried up, they remain still green and succulent, and to the thirsty animals who roam those arid plains the cacti must be veritable "fountains in the desert," to be got at by hook or by crook for the salvation of their dear life. Hence that formidable array of spines, which is nevertheless not always a protection, for the wild asses contrive to split and root up the roots of the melocactus of South America with their hoofs, and regale themselves unharmed on its abundant juices.

The peculiar form of cactus known as the prickly pear is built up of flat articulated branch-like stems, that push out from each other in all sorts of irregular ways, usually from the edges, where the active buds are situated. Fleshy points dot the articulations, and the leaves are changed into strong sharp spines, two or three to each spot. This cactus is the "Ficodindia" of Sicily, but it was introduced there, not from India, as its name would seem to imply, but from South America. It has become naturalised in the island and grows into large dense bushes which form an impenetrable fence wherever they are planted. Whoever has seen a Sicilian roadside hedge can never forget the striking masses of pale-green prickly pear that form the background to rows of agaves, whose spiked glaucous leaves contradict in outline the rounded articulations of the former, while the silvery and finely cut foliage of a species of Artemisia softens and blends the whole into a charming harmony of low-toned tints of colour.

By the peasants, the Ficodindia is named "the Providence of Sicily." It supplies them with a cheap and palatable fruit at no expense, and its succulent stems make an excellent fodder for their sheep and goats. It is easy to be on one's guard against the bristling spines on the green parts of the plant; but, if inexperienced, one may very easily suffer from the far more disagreeable minute hooked bristles that, in a fresh state, are embedded in the little black dots that symmetrically decorate the prettily-coloured fruit.

On an autumn morning, when sauntering along one of the narrow paths that wind through the charming gardens and vineyards of the island of Capri, a peasant woman came out to us from her flat-roofed cabin, about which the prickly pear trees were spreading their strange contorted limbs, and, with the winning grace of her people, offered some of the fruit to the passers-by. Her offer being accepted, she forthwith cut off both ends of the pear, made an incision in the stem from top to bottom, deftly turned back the outer rind without touching it with her fingers, displayed the juicy orange flesh within, and presented it to the Signora. The foolish Signora, not content with eating, must needs desire some unpeeled fruit to carry away with her. Though strongly disapproving and declaring that it would do me harm, the contadina finally concluded that there was no accounting for the eccentricities of English folk, and gave some of the coveted fruits into my ungloved hand. How I paid for my curiosity by getting the small barbed bristles into my fingers I can never forget, for they produced a most annoying irritation and rankled in the skin for several days. The motto of the Ficodindia might well be the same as that of the Scotch thistle: "Wha daur meddle wi' me!"

## BELATED FLOWERS.

The majority of flowers comes in our hottest months, June and July; yet there are some plants that bloom in early spring and in late autumn. It is, I believe, generally thought that the early and the late flowers get an advantage by being early and late, in that there are few competitors at those times for insect visitors. Yet I do not see how early and late flowering can have been brought about by this cause; if there are many flowers in the hot months there are likewise many more insects. It is true that the Ivy flowers in late October or November are the centre of interest for such insects as remain; but if the Ivy flowered in July, would not the flowers have more not less nectar suckers? Again, it cannot be every year that the Snowdrops get a chance of cross-fertilisation by the hive bees that emerge only on warm sunny days; during many seasons the Winter Aconite is not visited at all by insects, though the honey-bee delights in it if the January days are compatible with life. Other causes must, I think, be looked for to account for early and late flowering.

An uninterrupted supply of plant food tends to profusion of leaves rather than of flowers, and the winter's sharp check to growth may be an equal cause with the summer's heat in the profusion of summer flowers, The plants that bloom in spring, all of them, construct their flower buds the year before, and store up reserve material to start them well into growth. It is supposed that Ivy was, in times gone by, a spring flower, that it has gradually taken to blooming earlier and earlier till it is now an autumn flower.

In *Kerner's Natural History of Plants* there is a table of the first opening of flowers, beginning with the Hazel and ending with the Ivy; it is also a table of heat constants, formed by adding together the daily maximum of sun temperatures from the 1st of January to the first opening of the flower; thus the Hazel flower opens at 226° and the Ivy not till 5910°. This, at first glance, appears to show the reason of late flowering, namely, the fact that some plants require more heat than others to produce their flowers. But this is not really the case, for the first of January is an arbitrary date; the Hazel could not bloom without the heat of the preceding summer, when its flower buds grew, and this heat is not reckoned; the sun heat after the 1st of January is only needed for the final act of opening the buds. In the case of Ivy, the 5910° of heat probably suffices for every process in flower growth. So it does not seem to be amount of heat required that causes late flowering. I come to no conclusion, and can only say that I do not see the cause of late flowering.

We plant our gardens with a proportion of late-flowering plants to get some in bloom as far on into the winter as the cold will permit. A mild autumn lets the summer flowers linger long, and opens too soon some of the spring ones. On November 1st, I have counted fifty species not usually autumn flowers. Dahlias may get cut down early by just one single night's sharp frost early in October. Nothing else suffers so much. A group of various Michaelmas daisies are much visited by hive bees in November days. A huge Chrysanthemum maximum is a mass of white flowers, the yellow one is brilliant on the house wall in the midst of monthly roses. Late in October, if not earlier, a large clump of Pampas-grass, Gynerium Argentium, throws up quite suddenly a number of flowering spikes, which develop very rapidly, and during the whole of November the silvery plumes are the pride and glory of the garden, for standing in front of a dark-foliaged Yew their beauty is heightened by contrast. Pampas-grass is a diœcious plant from Brazil, and the pistillate flowers which in the garden never get fertilised, last many weeks. Schizostylis cocainea, an African plant with the habit of a Gladiolus, flowers in late autumn, it has a one-sided spike of crimson flowers opening from below; they flourish all through a mild November. Christmas roses possibly come too soon, I have had to cut them in the first days of December. Helleborus fœtidus will be in flower now, and the yellow Jasmine may have been out upon the house for two or three weeks. S. A.

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## BIRD NOTES FOR NOVEMBER.

The November that has brought great reverses in weather, has been a dull time for birds. This is always a quiet season in Lakeland, which lies on no main route of migration; for not only have the twenty-two (or more) species of birds that fill our summer groves and meadows long crossed the sea, but many more species, that never leave England, draw off from our mountain lands in flocks when autumn sets in, to lead a nomad life on lower levels. The Greenfinch has gone, and so has the Throstle; Starlings that returned to their nesting stations to sing in September have withdrawn; the Meadow-Pipit has left the heather; the Pied-Wagtails that ran chirruping over the farm roofs in October are gone too. The landscape seems vacant, except for harsh-voiced Crows and Magpies and the screaming Jay; and what small birds are met with, betray a sense of loneliness. They join company in miscellaneous groups. For instance, a couple of Bullfinches, a large family of Long-tailed Titmice, and another of Coal Titmice, may be seen rummaging a lonely woodside together; the Great and Blue Titmice, the Chaffinch, the Bullfinch, the Robin, and the Gold Crest will hunt an exposed hedge-row in juxtaposition. The utility of the birds' call-notes is now shown, and these varied parties continually sound the note-signals that keep them together. The seed-loving Coal-Tits, that are tempted from the larch-wood which the Bottle-Tits never stray from, down to the juniper bushes on its edge, call clearly *teep*, *teep*, for fear of being left behind. A Bullfinch, lost when feeding in a fog, will betray the greatest distress by the shrillness of its pipe. And the birds have cause for timidity. The fierce Sparrow-Hawk is about, and lives upon its smaller fellows, striking down even a Blackbird with ease. Perhaps the most fearless of little birds is the Marsh Titmouse, which may often be met alone, and which is exceedingly busy just now extracting the grubs from the oak-galls. The harvest this year of the cherry-gall (which, as is well known, is the work of the hymenopterous insect called *Dryophanta scutellaris*) is prodigious. To make up for absentees in bird life, there are, however, a few new comers. Small parties of Fieldfares are about; but as hedgerow fruit is scarce, we shall probably have no large army quartered on our district this winter. Herons have been seen about the landscape, far from any mere; and it is possible these birds may be doing what Mr. Chapman says the Northumbrian herons do at this season, viz., following the spawning fish up the becks. On the 21st a seasonable sight was visible in the assembly of wild fowl on the Tarns. It was a glorious day, of brilliant sunshine and dry clear atmosphere; thin plates of ice, left from the night's frost, stretched right across the bays, and in places from shore to opposite promontory. But at the upper end the water was quite free, and dappled with a faint breeze. It was here the birds were congregated; thirty to forty Mallards—the drakes in splendid plumage—were swimming about or sunning themselves, with some conversation of *quack*, *quack*, while a small flotilla of Golden-eye Ducks, only three young or females, kept apart and together. They dived incessantly. Flop, flop, flop, with a fish-like spring, with stiffened necks (that shows the diagonal line of their start downwards), and all are gone. The eddies die off the vacant water; we count eighteen seconds, twenty, even twenty-six, before—flop, flop, flop, and here, with the same spring backwards, are the three cheery little ducks afloat again. But they are greedy for more, and scarcely has the broken water trickled off their backs and rusty-brown necks than they are down again to the feast below. They act in concert, dive together and swim together; even when one takes a short flight and then splashes down with trailing webbed feet, he calls a low *gowak* for the others to follow; which they do.

But now the Mallard are up. At some alarm they rise, first turning to the swampy shore at the head, then rising and circling high, with a sharp *pinging* sound of wings, and a subdued *quack-quack* from the leader.

How still and sunny is the air! The tinkle of a tiny Redpole come from far across the open space of lake and fell; behind in the wood, the Coal Tit's call has a lonely sound. The Redwing, that flits scared from its perch close by the larch tree trunk (when it thought itself in concealment) makes scarce a cheep; the Gold Crest fluttering near makes little noise. And this perfect November day finds some objects at point of perfection. The autumnal gorse is bright and golden; and here, close down in heather and grass, is something that is like a golden-bronze chrysanthemum. The seeming petals are a little more thick and fleshy, that is all; but it is a fungus, and is called *Clavaria fusiformis*.

M. L. A.

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# HEALTH NOTES.

*Edited by* H. Laing Gordon, M.D.

## PHYSIOLOGY IN THE NURSERY.

The nursery is certainly fitting as a temple for the worship of the goddess Hygeia, and it is right and proper to place within reach of parents the knowledge of elementary physiological facts which shall enable them to order and conduct the nursery in a rational manner. The Parents' Union has done much in this direction; most branches have lectures on nursery hygiene occasionally, and have other means of disseminating the desired knowledge. Mothers and nurses who wish rational guidance in the nursery will find the "Physiological Nursery Chart," issued by The Scientific Press, 28, Southampton Street, W.C., useful for reference when the words of a lecturer are forgotten perhaps, for guidance in details of nursery life—small but not unimportant,—and for use on the installation of a new nursery-maid.

The chart in question gives a table indicating the proper method for preparing an ordinary infant's food, and simple directions for sterilization. This is followed by a weight chart, which enables the mother to record the infant's weight from week to week, and thus to see at a glance whether the growth is proceeding at the average rate, such as would be expected of a child in health. It will be seen that here is every opportunity for those who wish to mix their maternal love with a little physiology. The only serious fault that we can find in the chart is an implied one. The chart is based on the assumption that the hero or heroine of the nursery, the walls of which it is meant to adorn, is to be reared artificially. We should feel happier if the chart apologized for its appearance on the ground that babies *sometimes* must be fed artificially; and that the artificial feeding of infants carries certain risks which are not run by the naturally-fed infant.